FACTSHEET

Veterinary Services

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Animal and Plant Health Inspection Service

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Information About Vesicular Stomatitis for the Beef Producer

What Is Vesicular Stomatitis?

Vesicular stomatitis is a sporadic, reemerging viral disease characterized by vesicular lesions on the tongue, oral mucosa, teats, or coronary bands of cattle, horses, and swine. The disease also affects sheep and goats. Many species of wild animals, including deer, bobcats, goats, raccoons, and monkeys, are also susceptible. People who handle infected animals also can become infected with vesicular stomatitis.

Vesicular stomatitis is most likely to occur during warm months in the Southwest, particularly along riverways and in valleys. The most recent outbreak of vesicular stomatitis occurred in the Southwestern United States from May to December 1995.

Aside from its economic impact, vesicular stomatitis is significant because its outward signs are similar to (although generally less severe than) those of foot-and-mouth disease, a devastating foreign disease of clovenhoofed animals that was eradicated from the United States in 1929. The only way to diagnose and differentiate these diseases is through laboratory tests.

The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) works to keep vesicular stomatitis from becoming established in the United States because of its similarity to other diseases of concern, its negative impact on livestock production, and its public health implications. Vesicular stomatitis is a disease that must be reported to the international animal health community when an outbreak is discovered. Individual countries may then take steps to restrict imports of U.S. livestock during outbreaks. Exports would be restricted to an even greater extent if vesicular stomatitis were allowed to spread in this country.

How Is This Virus Transmitted?

Vesicular stomatitis has been confirmed only in North, Central, and South America. The disease is endemic in the warmer regions of the Western Hemisphere, but sporadic outbreaks occur in temperate geographic areas.

How vesicular stomatitis spreads is not fully known; insect vectors, mechanical transmission, and movement of animals may be responsible. Once introduced into a herd, the disease apparently moves from animal to animal by contact or exposure to saliva or fluid from ruptured blisters.

What Are the Clinical Signs?

The incubation period for vesicular stomatitis ranges from 2 to 8 days. Fever can occur immediately before or at the same time lesions first appear but is of short duration and thus is rarely detected. The most common clinical sign in cattle is drooling or frothing at the mouth. Infected animals suffer from blisterlike lesions in the mouth and on the dental pad, tongue, lips, nostrils, hooves, and teats. Mouth lesions can be so painful that infected animals generally refuse to eat or drink. Infected animals usually experience severe weight loss.

Cows with painful teat lesions may refuse to nurse, resulting in early weaning. Foot lesions cause lameness in less than 5 percent of infected cattle. Vesicular stomatitis generally does not cause animals to die.

The number of infected cattle in a herd varies. Five to 10 percent of animals within an infected herd show clinical signs, and up to 80 percent of the animals in a herd may become infected. If there are no complications, such as secondary infections, infected animals recover in about 2 weeks. However, the ulcers may take up to 2 months to heal, and healing animals may still spread the disease.

What Is the Human Health Risk?

People who handle an infected animal can contract vesicular stomatitis if they fail to follow proper biosafety methods. In humans, vesicular stomatitis causes an acute influenzalike illness with

symptoms such as fever, muscle aches, headaches, and malaise. Vesicular lesions are rare in humans. Prevalence in humans may be underreported because the disease often goes undetected or is misdiagnosed. People who handle potentially infected cattle should wear gloves to protect their hands and should not allow saliva and blister fluids to come in contact with open wounds or with their mucous membranes, such as the membranes in their eyes or mouth. Producers and other individuals who handle cattle and experience symptoms should contact their physician immediately.

What Are the Economic Impacts of Vesicular Stomatitis?

Little information is available on the economic impact of vesicular stomatitis in beef herds, but the greatest impact appears to be on calves with low market weights because they were weaned early from cows with painful teat lesions. Calves may be 50 to 100 pounds underweight depending on supplementation and the age they were weaned. However, these calves regain healthy weights when they start to eat and drink again.

In an effort to more accurately assess the financial impact vesicular stomatitis can have on beef herds, New Mexican beef cattle owners were surveyed about the 1995 summer and fall outbreak in the Western United States. The results indicated that the estimated loss for each infected animal was $53; two-thirds of this amount was for increased labor costs.

How Can You Reduce Economic Losses?

When a beef herd becomes infected, producers can reduce economic losses by implementing management practices that will minimize the spread of the disease to susceptible herdmates and by effectively treating infected animals. Producers also should take precautions to prevent human infection.

How Can You Prevent Vesicular Stomatitis Infection?

Facilities and Equipment—Vesicular stomatitis can spread rapidly within a herd through direct contact between animals, common feed and water troughs, insects, and inanimate objects that can harbor the virus (fomites), including feeding equipment and bedding. Use the following measures to keep your facility and equipment clean:

- Clean and sanitize feed bunks and water sources daily.
- Use different boots or disinfectant footbaths when moving between clean and infected areas. Phenolic- and halogen-based disinfectants work best (see the tabulation under the section “Effective Disinfectants”). Sunlight and heat also destroy the virus quickly.
- Clean and sanitize feeding and cleaning equipment before using with healthy animals.
- Implement a vector control program for animals and your facility.
- Maintain ground surface conditions that minimize the risk of foot injuries in cattle. Foot skin integrity can be enhanced by routine bathing in antiseptic solutions.

Feed—Cattle should be fed high-quality forage and soft grains to reduce mouth injuries. Place concentrates in a clean bunk on top of hay or silage. Compost, ferment, or burn leftover feed daily. To prevent oral abrasions supplement the food of weaned calves with highly palatable creep feeds that have a minimum of rough, coarse material.

Treatment—Producers should implement treatments to reduce secondary bacterial infection and promote healing. Supportive care, such as adding high-energy liquid gruel feed or electrolytes to the water supply, is the single most important treatment. Consult a veterinarian about lesions to treat. Uncomplicated oral ulcers usually heal in 2 weeks, and cows are back on feed within 7 days of showing clinical signs. To hasten healing of infected animals, implement the following treatments:

- Swab oral ulcers with a 1 to 2 percent solution of Lugol’s iodine and oral and injectable antibiotics, and observe appropriate antibiotic withdrawal periods.
- Spray foot ulcers twice daily with a saturated solution of copper sulfate.
- Treat teat ulcers with a spray solution of antibiotics and an antiinflammatory drug.

Adding Cattle to a Herd—Cattle that are already infected with vesicular stomatitis or that have been in contact with infected animals can introduce the disease into healthy beef herds. Producers should ascertain that new cattle come from sources that have not had animals with clinical signs of vesicular stomatitis in the past 3 months. Producers should isolate newly arrived cattle and calves from the rest of the herd for at least 21 days because infected animals often do not show clinical signs. The isolation area is ideally offsite and as far away from the main herd as feasible.

Producers should take similar precautions to avoid reintroducing vesicular stomatitis into a herd that has just recovered from the disease. Cattle can become reinfected with the virus after only a few weeks.

Animal Movements—Intermingling infected and healthy animals may contribute to the spread of vesicular stomatitis. Producers should take the following precautions in limiting animal movement:

- Isolate infected animals and maintain them in an area physically removed from other cattle as soon as signs appear.
- Minimize interpen movement of all animals.
- Isolate dead animals for pickup by a salvage truck.
- Spray carcasses around the mouth, teats, and feet with disinfectant and treat them with insecticide.
- Avoid putting cattle into contact with livestock and other animals, such as dogs, cats, rodents, birds, and insects. The same rules apply here as for isolating new herd additions from the main herd. The goal is to minimize or prevent the entrance of any potential biological or mechanical vector of vesicular stomatitis into beef herds.

Controlling Insects—Preventive activities should incorporate insect controls because insects are thought to be vectors. Consult your veterinarian for advice on selecting an insecticide approved for use with beef cattle. In addition to animal and premises treatment, eliminate habitats favorable to insect survival. For example, screen the windows of all buildings where animals are housed, and eliminate standing water and objects that attract insects.

Mechanical Transmission—Scientists suspect that the vesicular stomatitis virus is transmitted also by people or inanimate objects such as feeding or cleaning utensils and health-care equipment (needles, nose tongs, etc.). Producers should take precautions to avoid transfering equipment and personnel between isolates and the main herd. Use separate sets of equipment for each group wherever possible. If equipment is shared, clean and disinfect it thoroughly between uses at different beef facilities. Also, clean and disinfect feed bunks and water sources daily. Personnel should shower and change clothing and boots when moving between isolates and the main herd. If production logistics permit, care for isolated animals after the main herd to avoid cross-contamination.

Keep service personnel and other visitors entering the premises to an absolute minimum. Again, require showers and clothes changes for these personnel. If possible, prevent feed, delivery, supplies, and other trucks from directly entering the unit. Ask drivers if they have visited other beef facilities and if they have taken appropriate cleaning and disinfecting precautions. Service personnel often visit multiple beef operations on any given day, and they and their vehicles, shoes, clothing, and equipment represent a potential source of disease transmission.

Farm vehicles that are used for transporting cattle to slaughter or that are driven to places where other cattle-hauling trucks and producers congregate should be cleaned and disinfected. Drivers of these vehicles should change contaminated clothing before returning to their home base.

For footbaths and disinfection of facilities and equipment, phenolic- and halogen-based disinfectants work best. Sunlight and heat also destroy the virus quickly.

Effective Disinfectants—The following table shows disinfectants found to be effective in inactivating the vesicular stomatitis virus when used for 10 minutes.

Disinfectant	*Concentration*
Chlorine bleach	0.645 percent
Wescodyne[tm]	4 percent
Cresylic acids	1 percent
Roccal[tm]	1:200
Septisol[tm]	1:50

Vaccination—Vesicular stomatitis vaccines for cattle have been available intermittently during outbreak years. However, little information is known about their efficacy in preventing infection, reducing clinical signs associated with infection, or lessening the economic impact of infection. Check with your State Veterinarian's office for information on the availability of vaccines and permits that may be required.

What Is the Impact of Vesicular Stomatitis on Reproduction?

Vesicular stomatitis seems to have no direct impact on reproduction. The virus is not known to cause abortion or fetal resorption. If infected cows become debilitated, they may experience delayed uterine involution and subsequent delays in the resumption of normal estrous cycles after calving.

Producers do not need to alter reproduction management practices during an outbreak except to make sure that the artificial insemination technician does not spread the disease through mechanical transmission. There is no evidence to suggest that the virus can spread by artificial insemination or rectal palpation other than through contaminated equipment.

Should Other Health-Management Programs Be Altered During an Outbreak?

Producers should take measures to minimize the risk of spreading vesicular stomatitis through infected animals' saliva and blister fluids. Temporarily eliminating procedures involving the head and feet, such as dehorning and foot trimming, should be considered. Delaying practices such as tattooing, vaccination (especially intranasal), removal of dewclaws or extra teats, administration of magnets, and eartagging may help prevent the spread of the disease to herdmates.

Because cattle with vesicular stomatitis may congregate around salt and mineral feeders, temporarily restricting an infected herd's access to them may be wise. Cattle's excessive salivation may cause these feeders to transfer the virus to other animals.

Insect control also can help prevent the spread of vesicular stomatitis. In addition to using eartags, dust bags, or sprays on the animals themselves, environmental sprays may reduce the local insect population. Eliminate or avoid prime insect habitats. Another suggestion is to avoid letting cattle graze in low-lying areas near water where insects are prevalent, especially early in the morning and late in the afternoon.

Report Suspicious Cases

Vesicular stomatitis infection in a beef herd can cause significant financial losses. Implementing appropriate, recommended management practices and working closely with your veterinarian can reduce the losses. Veterinarians and livestock owners who suspect an animal may have vesicular stomatitis or any other vesicular disease should immediately contact State or Federal animal health authorities.

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